Glove Designed to Work as Input Device

By Scott Mace
InfoWorld Staff

CHICAGO — The field of user input devices is about to get a new player in the form of a glove that senses most common hand movements, according to its developers.

VPL Research Inc. of Palo Alto, California, last week unveiled its $39.95 Z-Glove at the summer Consumer Electronics Show here. Hooked to a microcomputer, the glove can be used in place of cursor keys, mice, or touch-screen devices, the company said. The glove was invented by VPL chief hardware engineer Tom Zimmerman.

Sharedata Inc. of Eden Prairie, Minnesota, is planning to offer in September a consumer version of the glove with a programming language and two sample applications for the Commodore 64 system, said John Zentz, president of Sharedata.

Sensors in front of the computer and in the glove sense where the user's hand is in three-dimensional space, as well as the tilt of the hand and whether the fingers are bent or straight, said Jaron Lanier, founder and chairman of VPL Research and designer of the programming language that controls the glove.

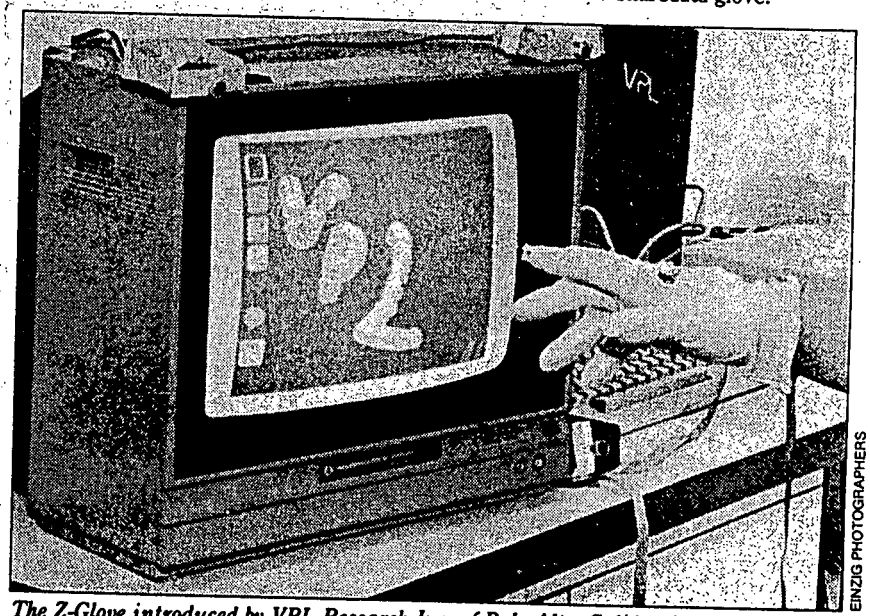
"You can handle objects shown on the computer screen much as if they were physically real," Lanier said. As an example, he demonstrated how users could "grab" the image of a bouncing ball in mid-flight.

A more expensive version of the glove is also being used at the National Aeronautics and Space Administration's Ames Research Center, in Mountain View, California, to control robots in space by remote control, said Lanier.

At NASA, research scientist Scott Fisher is using the glove with a heads-up display helmet, which projects an image of the cockpit instruments on the helmet's screen so pilots don't have to look down. The glove adds computer images or stereoscopic TV images from remote locations to the display. The helmet can also track which way the wearer's head is moving to operate the TV cameras or change the display, he said. In addition, the glove can operate a remote robot claw or hand in outer space to work like a human hand during space station construction, Fisher said. "Mimicking the human hand turns out to be easier than using any other kind of input device, such as a mouse or joystick," he said.

For now, Lanier will say little about potential business applications of the glove, saying he is bound by confidentiality agreements. Sharedata is only marketing the consumer version, Zentz said.

The programming language, called Grasp, that Lanier has developed for the glove was featured on the September 1984 cover of *Scientific American*. Grasp will be the first computer language to allow users to change the workings of a program while it is running by operating a simulated "control panel," Lanier said. Grasp will be included with the Sharedata glove.



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The Z-Glove introduced by VPL Research Inc. of Palo Alto, California, can be used in

EXHIBIT 8

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